

## **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims:**

1           1. (Currently Amended) A method for invalidating a resource record in a  
2 local cache at a client computer system within a network, comprising:  
3           retrieving the resource record from the local cache at the client;  
4           issuing one or more queries for the resource record;  
5           waiting for a response to the query; and  
6           if the response to the query is not received in a pre-determined amount of  
7 time and after issuing a predetermined number of queries for the resource record,  
8 invalidating the resource record at the client, ~~wherein invalidating the resource~~  
9 ~~record further comprises invalidating a child resource record of the resource~~  
10 ~~record.~~

1           2 (Canceled).

1           3. (Original) The method of claim 1, further comprising:  
2           receiving a multicast message from a second client querying a second  
3 device;  
4           locating a second resource record associated with the second device;  
5           waiting for a multicast response to the multicast query; and  
6           if after a pre-determined number of queries the multicast response to the  
7 multicast query is not received in the pre-determined amount of time, invalidating  
8 the second resource record.

1           4. (Canceled)

1           5. (Original) The method of claim 1, wherein if the response to the query  
2 is not received in a pre-determined amount of time, the method further comprises:  
3           retrieving a parent record of the resource record at the client, wherein the  
4 parent record refers to the resource record;  
5           issuing a query for the parent record;  
6           waiting for a response to the query from the device; and  
7           if the response to the query is not received in a pre-determined amount of  
8 time, invalidating the parent record, and then repeating the above process by  
9 applying it recursively to any records that refer to the now-invalidated parent  
10 record.

1           6. (Original) The method of claim 1, wherein if the response to the query  
2 is not received in a pre-determined amount of time, the method further comprises:  
3           retrieving a parent record of the resource record at the client, wherein the  
4 parent record refers to the resource record;  
5           issuing a query for the parent record;  
6           receiving a response to the query from the device, wherein the response  
7 includes information for updating the resource record; and  
8           updating the resource record with the information received in the  
9 response.

1           7. (Original) The method of claim 6, wherein the method further  
2 comprises updating the parent record with the information received in the  
3 response.

1           8. (Original) The method of claim 1, wherein the method is invoked at a  
2 pre-specified time interval.

1           9. (Currently Amended) A computer-readable storage medium storing  
2 instructions that when executed by a computer cause the computer to perform a  
3 method for invalidating a resource record in a local cache at a client computer  
4 system within a network, the method comprising:  
5           retrieving the resource record from the local cache at the client;  
6           issuing one or more queries for the resource record;  
7           waiting for a response to the query; and  
8           if the response to the query is not received in a pre-determined amount of  
9 time and after issuing a predetermined number of queries for the resource record,  
10 invalidating the resource record at the client, ~~wherein invalidating the resource~~  
11 ~~record further comprises invalidating a child resource record of the resource~~  
12 ~~record.~~

1           10 (Canceled).

1           11. (Original) The computer-readable storage medium of claim 9, wherein  
2 the method further comprises:  
3           receiving a multicast message from a second client querying a second  
4 device;  
5           locating a second resource record associated with the second device;  
6           waiting for a multicast response to the multicast query; and  
7           if after a pre-determined number of queries the multicast response to the  
8 multicast query is not received in the pre-determined amount of time, invalidating  
9 the second resource record.

1           12. (Canceled)

1           13. (Original) The computer-readable storage medium of claim 9, wherein  
2 if the response to the query is not received in a pre-determined amount of time,  
3 the method further comprises:  
4           retrieving a parent record of the resource record at the client, wherein the  
5 parent record refers to the resource record;  
6           issuing a query for the parent record;  
7           waiting for a response to the query from the device; and  
8           if the response to the query is not received in a pre-determined amount of  
9 time, invalidating the parent record, and then repeating the above process by  
10 applying it recursively to any records that refer to the now-invalidated parent  
11 record.

1           14. (Original) The computer-readable storage medium of claim 9, wherein  
2 if the response to the query is not received in a pre-determined amount of time,  
3 the method further comprises:  
4           retrieving a parent record of the resource record at the client, wherein the  
5 parent record refers to the resource record;  
6           issuing a query for the parent record;  
7           receiving a response to the query from the device, wherein the response  
8 includes information for updating the resource record; and  
9           updating the resource record with the information received in the  
10 response.

1           15. (Original) The computer-readable storage medium of claim 14,  
2 wherein the method further comprises updating the parent record with the  
3 information received in the response.

1           16. (Original) The computer-readable storage medium of claim 9, wherein  
2 the method is invoked at a pre-specified time interval.

1           17. (Currently Amended) An apparatus that invalidates a resource record  
2 in a local cache at a client computer system within a network, comprising:  
3           a retrieval mechanism at the client configured to retrieve the resource  
4 record from the local cache at the client; and  
5           an invalidation mechanism configured to,  
6                       issue one or more queries for the resource record,  
7                       wait for a response to the query, and  
8                       if the response to the query is not received in a pre-  
9                       determined amount of time and after issuing a predetermined  
10                      number of queries for the resource record, to invalidate the  
11           resource record at the client, ~~wherein invalidating the resource~~  
12           ~~record further comprises invalidating a child resource record of the~~  
13           ~~resource record.~~

1           18 (Canceled).

1           19. (Original) The apparatus of claim 17, wherein the invalidation  
2 mechanism is configured to:  
3           receive a multicast message from a second client querying a second  
4 device;  
5           locate a second resource record associated with the second device;  
6           wait for a multicast response to the multicast query; and  
7           if after a pre-determined number of queries the multicast response to the  
8 multicast query is not received in the pre-determined amount of time, to invalidate  
9 the second resource record.

1           20. (Canceled)

1           21. (Original) The apparatus of claim 17, wherein if the response to the  
2 query is not received in a pre-determined amount of time, the invalidation  
3 mechanism is additionally configured to:  
4           retrieve a parent record of the resource record at the client, wherein the  
5 parent record refers to the resource record;  
6           issue a query for the parent record;  
7           wait for a response to the query from the device; and  
8           if the response to the query is not received in a pre-determined amount of  
9 time, to invalidate the parent record, and to then repeat the above process by  
10 applying it recursively to any records that refer to the now-invalidated parent  
11 record.

1           22. (Original) The apparatus of claim 17, further comprising an updating  
2 mechanism, wherein if the response to the query is not received in a pre-  
3 determined amount of time, the updating mechanism is configured to:  
4           retrieve a parent record of the resource record at the client, wherein the  
5 parent record refers to the resource record;  
6           issue a query for the parent record;  
7           receive a response to the query from the device, wherein the response  
8 includes information for updating the resource record; and to  
9           update the resource record with the information received in the response.

1           23. (Original) The apparatus of claim 22, wherein the updating  
2 mechanism is additionally configured to update the parent record with the  
3 information received in the response.

1           24. (Original) The apparatus of claim 17, wherein the apparatus is  
2 invoked at a pre-specified time interval.

1           25–34. (Canceled)

1           35. (New) The method of claim 1 wherein invalidating the resource record  
2 further comprises invalidating a child resource record of the resource record.

1           36. (New) The computer-readable storage medium of claim 9, wherein  
2 invalidating the resource record further comprises invalidating a child resource  
3 record of the resource record.

1           37. (New) The apparatus of claim 17, wherein invalidating the resource  
2 record further comprises invalidating a child resource record of the resource  
3 record.

1           38.     (New) A method for invalidating a resource record in a local  
2 cache at a client computer system, comprising:  
3           determining that a device that provides a service on a network or a service  
4 on the network is to be validated;  
5           if a device is to be validated, looking up a device record for the device in  
6 the cache and using the device record to look up an associated service record,  
7 otherwise, if a service is to be validated, looking up the service record in the  
8 cache;  
9           determining an address record in the service record and using a host  
10 address and a port number in the address record to send a query to the service on  
11 the network;  
12           if the service responds within a predetermined time, validating the service  
13 record;  
14           if the service does not respond within the predetermined time, resending  
15 the query to the service until the service responds or until a predetermined  
16 number of queries has been sent

17           upon sending the predetermined number of queries without receiving a  
18 response, invalidating the address record and marking the service record as  
19 suspect;  
20           querying the service by sending a broadcast message to the entire  
21 network and waiting a predetermined time for a response;  
22           if the service responds, updating address record with  
23 address information included in the response;  
24           if the service does not respond after a predetermined time  
25 and a predetermined number of queries, invalidating the service  
26 record.

1           39.   (New) The method of claim 38, wherein the method further  
2 comprises:  
3           upon invalidating the service record, marking an associated device record  
4 as suspect;  
5           querying the device in the device record by sending a broadcast message  
6 to the entire network and waiting a predetermined time for a response;  
7           if the device responds, updating the service record and the address record  
8 with information in the response;  
9           if the device does not respond after the predetermined time,  
10           resending the broadcast message to the entire network until the  
11 device responds or until a predetermined number of queries has been sent,  
12 and  
13           if the device responds, updating the service record and the  
14 address record with information in the response;  
15           otherwise, invalidating the device record.